IN THE CLAIMS

Please amend the claims as follows:

Claims 1-7 (Canceled).

Claim 8. (New) An apparatus for electronic activation of a driver device configured to drive at least one ultrasonic piezoelectric actuator interfaced a control computer, said apparatus comprising:

a DC-to-AC step-up voltage converter configured to receive a DC voltage from a voltage source, the high-voltage output of the DC-to-AC voltage converter is connected to an oscillating circuit, the oscillating circuit includes an actuator and a resonance inductor;

the DC-to-AC converter includes at least one transformer, the at least one transformer including at least one primary winding connected to the voltage source by at least one drivable switch, and a secondary winding configured to deliver an AC signal for excitation of the actuator, wherein

a voltage across the terminals of a load comprising the transformer, resonance inductor and actuator is a signal with a specified chopping frequency,

a current flowing in the load is a periodic signal of a resonance frequency such that a chopping frequency of the signal is smaller than twice the resonance frequency, and

the at least one drivable switch is configured to close when the current flowing in the load is zero.

Claim 9. (New) The apparatus of Claim 8, wherein a zero current closing of the at least one switch is based on a transformation ratio of the transformer and of the resonance inductor determined as a function of an equivalent capacitance of the actuator.

Claim 10. (New) An apparatus for electronic activation of a driver device configured to drive at least one ultrasonic piezoelectric actuator interfaced a control computer, said apparatus comprising:

a DC-to-AC step-up voltage converter configured to receive a DC voltage from a voltage source, the high-voltage output of the DC-to-AC voltage converter is connected to an oscillating circuit, the oscillating circuit includes an actuator and a resonance inductor;

the DC-to-AC converter includes at least one transformer, the at least one transformer including at least one primary winding connected to the voltage source by at least one drivable switch, and a secondary winding configured to deliver an AC signal for excitation of the piezoelectric actuator, wherein

a voltage across the terminals of a load comprising the transformer, resonance inductor and actuator is a signal of a specified chopping frequency,

a current flowing in the load is a periodic signal whose phase is advanced relative to the voltage across the terminals of the load, and resonance frequency of the current is such that a chopping frequency of the signal lies between half and twice the resonance frequency,

the at least one drivable switch is configured to close when the current flowing in the load is zero.

Claim 11. (New) The apparatus of claim 9, wherein a zero current closing of the at least one switch is based on a transformation ratio of the transformer and of the resonance inductor determined as a function of an equivalent capacitance of the actuator.

Claim 12. (New) An apparatus for electronic activation of a driver device configured to drive at least one ultrasonic piezoelectric actuator interfaced a control computer, said apparatus comprising:

a DC-to-AC step-up voltage converter configured to receive a DC voltage from a voltage source, the high-voltage output of the DC-to-AC voltage converter is connected to an oscillating circuit, the oscillating circuit includes an actuator and a resonance inductor;

the DC-to-AC converter includes at least one transformer, the at least one transformer including at least one primary winding connected to the voltage source by at least one drivable switch, and a secondary winding configured to deliver an AC signal for excitation of the piezoelectric actuator, wherein

a voltage across the terminals of a load comprising the transformer, resonance inductor and actuator is a signal of a specified chopping frequency,

a current flowing in the load is a periodic signal whose phase is retarded relative to the voltage across the terminals of the load, and a frequency of the current is such that chopping frequency of the signal is greater than half the resonance frequency,

the at least one drivable switch is configured to close when the current flowing in the load is zero.

Claim 13. (New)The apparatus of claim 12, wherein a zero current closing of the at least one switch is based on a transformation ratio of the transformer and of the resonance inductor determined as a function of an equivalent capacitance of the actuator.

Claim 14. (New) The apparatus of claim 8, wherein

the DC-to-AC converter is configured to include a bridge circuit containing the at least one transformer having at least one primary winding, the bridge circuit being established from a first arm composed of two alternately drivable bridge switches connected in series and of at least one second arm in parallel with the first arm and also composed of two alternately drivable bridge switches connected in series, a center point of the second arm being

connected to a center point of the first arm by the load composed of the transformer, resonance inductor, and actuator;

each bridge switch including a diode and a transistor;

the bridge switches are configured to be activated in phases,

a first phase including

at an initial time T_0, a first transistor of the first arm and a second transistor of the second arm constituting a first pair are each driven to a closed position when the current in diodes corresponding to the transistors of the first pair is zero,

between times T_0 and T_1, the transistors of the first pair are closed, while the diodes corresponding to the first pair are nonconducting, and a second transistor of the first arm and a first transistor of the second arm constituting a second pair are opened,

at the time T_1, the diodes corresponding to the first pair conduct and the two transistors of the first pair are driven to an open position between the time T_1 and a time T_2, the time T_2 being a time at which the diodes corresponding to the first pair are no longer conducting,

during a second phase

at a time T_3, the transistors of the second pair are closed when the current in the diodes corresponding to the transistors of the first pair is zero,

at time between T_3 and T_4, transistors of the second pair are closed while the diodes corresponding to the transistors of the second pair are nonconducting and the transistors of the first pair are open; and

at the time of T_4, the two diodes corresponding to the transistors of the second pair become conducting and the two transistors of the second pair are configured to be in an open position.

Claim 15. (New) The apparatus of claim 14, wherein the first and second phases are repeated.

Claim 16. (New) The apparatus of claim 10, wherein

the DC-to-AC converter is configured to include a bridge circuit containing the at least one transformer having at least one primary winding, the bridge circuit being established from a first arm composed of two alternately drivable bridge switches connected in series and of at least one second arm in parallel with the first arm and also composed of two alternately drivable bridge switches connected in series, a center point of the second arm being connected to a center point of the first arm by the load composed of the transformer, resonance inductor, and actuator;

each bridge switch including a diode and a transistor;

the bridge switches are configured to be activated during a first phase,

the first phase including

at an initial time T_0, a first transistor of the first arm and a second transistor of the second arm constituting a first pair are each in a closed position when the current is zero in diodes corresponding to the transistors of the first pair,

between times T_0 and T_1, the transistors of the first pair are closed, while the diodes corresponding to all of the transistors are nonconducting,

at the time T_1, the diodes corresponding to the first pair conduct and the two transistors of the first pair are driven to an open position between the time T_1 and a

time T_2, the time T_2 being a time at which no current is present the transistors of the first pair;

at the time T_2, a second transistor of the first arm and a first transistor of the second arm constituting a second pair are closed while the diodes corresponding to the transistors of the first pair are still conducting;

between times T_3 and T_4, the diodes corresponding to the transistors of the second pair become conducting and the transistors of the second pair are configured to be in an open position;

at time T_4, the two transistors of the first pair are in a closed position, and the two diodes corresponding to the transistors of the second pair are nonconducting.

Claim 17. (New) The apparatus of claim 12, wherein

the DC-to-AC converter is configured to include a bridge circuit containing the at least one transformer having at least one primary winding, the bridge circuit being established from a first arm composed of two alternately drivable bridge switches connected in series and of at least one second arm in parallel with the first arm and also composed of two alternately drivable bridge switches connected in series, a center point of the second arm being connected to a center point of the first arm by the load composed of the transformer, resonance inductor, and actuator;

each bridge switch including a diode and a transistor;

the bridge switches are configured to be activated during a first phase,

the first phase including

between an initial time T_0 and a subsequent time T_1, a first transistor of the first arm and a second switch of the second arm constituting a first pair are in a closed position when diodes corresponding to the first pair and other diodes corresponding to

the second transistor of the first arm and of the first transistor of the second arm, constituting a second pair, are nonconducting, and the two transistors of the second pair are open,

at the time T_1, the diodes of the first pair of transistors are nonconducting,

between times T_1 and T_2, the two transistors of the first pair remain closed,

at time T_2, the transistors of the first pair are in an open position, the diodes corresponding to the second pair of transistors become conducting and voltage is no longer present at the terminals of the transistors of the second pair, the diodes corresponding to the first pair being nonconducting, and

between times T_2 and T_3, the transistors of the second pair are driven to a closed position, after which they are driven to open position at the instant T_4.